

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please ADD new claims 20-26 in accordance with the following:

1. (previously presented) A network system which communicates with a network device storing information or an object, and has a function of retrieving information, comprising:

an information network address unit monitoring information network addresses of packets transferred through the network system to track current locations of information, and assigning an information network address which is an identification name of specific information or an object and non-uniquely specifies a host holding the specific information or the object, where if one host holds plural pieces of information, the host has a plurality of information network addresses and if multiple hosts have identical information, the hosts have identical information network addresses, and where said information network address unit identifies another host accessible to the user and containing the specific information if the host becomes inaccessible to the user during transfer of information; and

an information retrieval communications unit establishing communications for the network device storing the specific information or the object corresponding to the information network address, so that

a user is not required to obtain a network address through a retrieval service for checking correspondence between information and network addresses,

a host accessed by the user using the information network address necessarily contains information and if communications cannot be established using the information network address, the information exists nowhere in the network system, and

the user is able to access a nearest host or least expensive host because change information is transmitted as route information to a routing mechanism in the network system when a configuration or position of any host is changed.

2. (original) The system according to claim 1, wherein said information network address unit comprises an information network address generation unit inputting information indicating a feature of the information or the object, and outputting the information network address.

3. (original) The system according to claim 2, wherein said information network address unit comprises an operations unit generating the information network address in arithmetic operation.

4. (original) The system according to claim 3, wherein said operations unit computes an error detection and correction code.

5. (original) The system according to claim 3, wherein said operations unit computes a secure hash function.

6. (original) The system according to claim 2, wherein said information network address generation unit is equipped with a database for accumulating correspondence between the information or the object and the information network address, and generates the information network address by searching the database.

7. (original) The system according to claim 6, wherein said information network address generation unit adds a record type indicating the name of the information or the object to a server of a domain name system which is the database, and obtains an information network address corresponding to the name of the information or the object.

8. (original) The system according to claim 6, wherein said information network address generation unit inquires uniform resource locator information of a plurality of WEB search engine retrieval system which is the database, and generates the information network address according to the obtained information.

9. (original) The system according to claim 1, wherein said information network address unit comprises an adjustment unit adjusting length and representation of a result obtained by inputting information indicating a feature of the information or an object such that the result can be assigned to a part or all of an existing network address as the information network address.

10. (original) The system according to claim 1, wherein: a portion for forming part of said information retrieval communications unit and relaying a packet addressed to the information network address comprises:

an information network address identification unit identifying the information network address; and

an information route management unit managing an information route using the information network address, wherein

said relaying portion relays the packet through the information route.

11. (original) The system according to claim 10, wherein said information route management unit manages the information route according to information set in a packet transmitted from a previously relayed information network address.

12. (original) The system according to claim 1, wherein said information retrieval communications unit establishes communications using the information network address by using an existing network address as the information network address and an existing communications mechanism for the network address.

13. (original) The system according to claim 1, wherein said information retrieval communications unit assigns the information network address to an existing any cast address.

14. (original) The system according to claim 1, wherein said information retrieval communications unit assigns the information network address to an existing multicast address.

15. (original) The system according to claim 1, wherein said information retrieval communications unit assigns the information network address to an existing broadcast address.

16. (previously presented) A network terminal device which communicates with a network device storing information or an object, and has a function of retrieving information, comprising:

an information network address unit monitoring information network addresses of packets transferred through the network system to track current locations of information, and assigning an information network address which is an identification name of specific information or an object and non-uniquely specifies a host holding the specific information or the object, where if one host holds plural pieces of information, the host has a plurality of information network addresses and if multiple hosts have identical information, the hosts have identical information network addresses, and where said information network address unit identifies

another host accessible to the user and containing the specific information if the host becomes inaccessible to the user during transfer of information; and

an information retrieval communications unit establishing communications for the network device storing information or an object corresponding to the information network address, so that

a user is not required to obtain a network address through a retrieval service for checking correspondence between information and network addresses,

a host accessed by the user using the information network address necessarily contains information and if communications cannot be established using the information network address, the information exists nowhere in the network system, and

the user is able to access a nearest host or least expensive host because change information is transmitted as route information to a routing mechanism in the network system when a configuration or position of any host is changed.

17. (previously presented) A computer-readable storage medium storing a program that when executed controls a computer forming a network terminal device to perform a method for communicating with a network device storing information or an object, said method comprising:

monitoring information network addresses of packets transferred through a network to track current locations of information;

assigning an information network address which is an identification name of specific information or an object and non-uniquely specifies a host holding the specific information or the object, where if one host holds plural pieces of information, the host has a plurality of information network addresses and if multiple hosts have identical information, the hosts have identical information network addresses, and where said information network address unit identifies another host accessible to the user and containing the specific information if the host becomes inaccessible to the user during transfer of information; and

establishing communications for the network device storing the information or the object corresponding to the information network address, so that

a user is not required to obtain a network address through a retrieval service for checking correspondence between information and network addresses,

a host accessed by the user using the information network address necessarily contains information and if communications cannot be established using the information network address, the information exists nowhere in the network system, and

the user is able to access a nearest host or least expensive host because change information is transmitted as route information to a routing mechanism in the network system when a configuration or position of any host is changed.

18. (previously presented) A network relay device which relays communications established for a network device which stores specific information or an object using an information network address which is a network address assigned to an identification name of the specific information or the object, comprising:

an information network address identification unit monitoring information network addresses of packets transferred through a network to track current locations of information, and identifying the information network address to non-uniquely specify a host holding the specific information or the object, where if one host holds plural pieces of information, the host has a plurality of information network addresses and if multiple hosts have identical information, the hosts have identical information network addresses, and where said information network address unit identifies another host accessible to the user and containing the specific information if the host becomes inaccessible to the user during transfer of information; and

an information route management unit managing an information route using the information network address to relay the packets through the information route, so that

a user is not required to obtain a network address through a retrieval service for checking correspondence between information and network addresses,

a host accessed by the user using the information network address necessarily contains information and if communications cannot be established using the information network address, the information exists nowhere in the network system, and

the user is able to access a nearest host or least expensive host because change information is transmitted as route information to a routing mechanism in the network system when a configuration or position of any host is changed.

19. (previously presented) A computer-readable storage medium storing a program that when executed controls a computer in a network relay device to perform a method of relaying communications established for a network device which stores specific information or an object using an information network address which is a network address assigned to an identification name of the specific information or the object, said method comprising:

monitoring information network addresses of packets transferred through a network to track current locations of information;

identifying the information network address to non-uniquely specify a host holding the specific information or the object, where if one host holds plural pieces of information, the host has a plurality of information network addresses and if multiple hosts have identical information, the hosts have identical information network addresses, and where said information network address unit identifies another host accessible to the user and containing the specific information if the host becomes inaccessible to the user during transfer of information;

managing an information route according to the information network address; and
relaying each packet through the information route, so that

a user is not required to obtain a network address through a retrieval service for checking correspondence between information and network addresses,

a host accessed by the user using the information network address necessarily contains information and if communications cannot be established using the information network address, the information exists nowhere in the network system, and

the user is able to access a nearest host or least expensive host because change information is transmitted as route information to a routing mechanism in the network system when a configuration or position of any host is changed.

20. (new) An information retrieving method for a network system comprises a user mechanism, a host containing information and a relay mechanism which communicates with a network device storing information or an object, said method comprising:

using the user mechanism to convert a character string, an image, voice, and other numeric data having an optional length representing information input as a communication target into a uniquely corresponding information network address, and to transmit a packet storing the information network address to the network;

upon receipt of the packet from the user mechanism, using the relay mechanism in the network to determine a route to the host containing the information corresponding to the information network address stored in the packet, and to relay the packet;

upon receipt of the packet from the relay mechanism, using the host to store the information corresponding to the information network address stored in the packet in a return packet having a user network address corresponding to the user mechanism as a destination address, and to transmit it to the network;

upon receipt of the return packet from the host, using the relay mechanism to determine the route to the user mechanism corresponding to the user network address stored in the return packet, and to relay the return packet; and

upon receipt of the return packet from the relay mechanism, using the user mechanism to receive the information stored in the return packet.

21. (new) The information retrieving method according to claim 20, wherein the user mechanism comprises an information network address mechanism and a user communications mechanism, and

wherein said information retrieving method further comprises:

using the information network address mechanism to convert the character string, the image, the voice, and the other numeric data into the uniquely corresponding information network address; and

using the user communications mechanism to generate the packet storing the information network address and other communication information, to transmit the packet to the network, to receive the return packet from the network and to extract information from the return packet.

22. (new) The information retrieving method according to claim 21, wherein the information network address mechanism comprises an operations mechanism, an adjustment mechanism and an information network address generation mechanism, and

wherein said information retrieving method further comprises:

using the operations mechanism to compute a unique value for determination of the uniquely corresponding information network address from the character string, the image, the voice, and the other numeric data;

using the adjustment mechanism to adjust a length and expression of the unique value output from the operations mechanism to enable allotment of the unique value to part or all of an existing network address; and

using the information network address generation mechanism to generate the uniquely corresponding information network address based on the unique value after adjustment by the adjustment mechanism, and to output the information network address to the user communications mechanism.

23. (new) The information retrieving method according to claim 20, wherein the relay mechanism comprises relay communications mechanisms, an information address detection mechanism and a transfer instruction mechanism, and

wherein said information retrieving method further comprises:

using a first relay communications mechanism to receive the packet from the network;

using the information address detection mechanism to detect a destination network address and the information network address from the packet;

using the transfer instruction mechanism to transfer the packet received by the first relay communications mechanism to a second relay communications mechanism corresponding to an appropriate route by referring to a first route table based on the destination network address detected by the information address detection mechanism, and by referring to a second route table based on the information network address detected by the information address detection mechanism;

using the second relay communications mechanism to transmit to the network a transferred packet obtained from the first relay communications mechanism;

using the first relay communications mechanism to check the information network address of the packet received from the network, and to manage an information route stored in the second route table to reflect the destination network address according to a predetermined discrimination standard; and

when source address information stored in the packet is the information network address, using the first relay communications mechanism to adjust to a change in network state by updating the information route of the second route table according to the source address information.

24. (new) A network communication system communicating with network devices storing at least one of information and objects, comprising:

at least one address monitoring unit obtaining current locations of the at least one of information and objects from packets transferred through the network communication system, and assigning information network addresses corresponding to the current locations, each information network address identifying specific information or an object stored on at least one host, where each host may have a plurality of information network addresses corresponding to different information or objects and multiple hosts may have identical information network addresses for identical information or objects; and

at least one information retrieval communication unit establishing communication for a first network device to retrieve from a second network device at least one of an item of information and a specific object corresponding to a specific information network address,

without obtaining a network address through a retrieval service for checking correspondence between information and network addresses, where if communication cannot be established using the specific information network address, the at least one of the item of information and the specific object is not accessible via the network communication system.

25. A network communication system according to claim 24, wherein said information network address unit identifies a third network device accessible to the first network device and containing the at least one of the item of information and the specific object if the second network device becomes inaccessible to the first network device during transfer of the at least one of the item of information and the specific object.

26. A network communication system according to claim 24, wherein said information network address unit updates each current location of the at least one of the item of information and the specific object in response to change information transmitted as route information when a change occurs in at least one of a configuration and a position of any network device storing the at least one of the item of information and the specific object, to enable the first network device to access at least one of a nearest network device and a least expensive network device storing the at least one of the item of information and the specific object.